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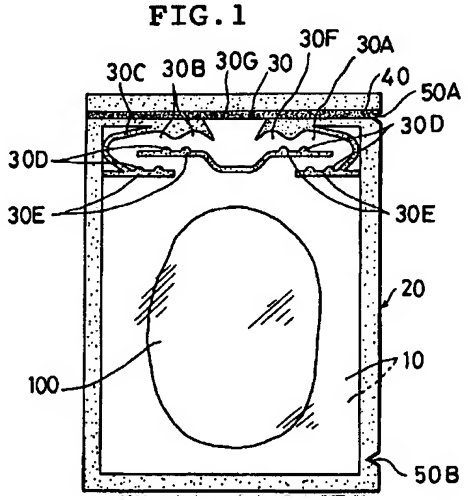
(54) Food product packaging bag

(57) A food product packaging bag (20) includes a bag body made of a synthetic resin (10), and an air discharge means (30) which is adapted to ensure that when the internal pressure in the bag (20) exceeds a predetermined level, air is discharged to prevent the internal pressure in said bag (20) from being risen more than a given value. Thus, when a food product is cooked in a microwave oven while remaining packed in the bag (20), it can be heated, and air in the bag expanded to rise the internal pressure. However, when the internal pressure exceeds a given level, the air is discharged to the outside through the air discharge means (30). In this manner, the food product can be cooked into a good taste.

FIG. 1



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Description

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates to a food product packaging bag which is adapted to accommodate a frozen food product such as a meat bun, a bean jam bun, a shao-mai, a hamburger steak, a broiled eel and the like and which is capable of being subjected to a cooking in a food product-packaging state in a microwave oven.

DESCRIPTION OF THE RELATED ART

A food product such as a meat bun or the like contained in the conventional packaging bag is incapable of being cooked in a packaged state to provide good taste. Therefore, it is a conventional practice to remove such a meat bun product from the packaging bag and then heat it with steam in a steaming basket for eating, or to moisten a meat bun product with water; wrap it with a polyethylene film and cook it under heating in a microwave oven.

When a frozen food product such as a hamburger steak or the like is cooked in a packaged state in a microwave oven, water contained in the food product is vaporized and expanded to increase the internal pressure in the bag, thereby bringing about a danger of bursting of the bag or the like. Therefore, it is necessary to remove the food product once from the packaging bag and to move it into a heat-resistant container, and if required, to wrap it with a polyethylene film.

In this way, the conventional food product packaging bag suffers from the following problem: the food product contained in such packaging bag is incapable of being cooked in the packaged state by heating to provide good taste, or it is necessary to remove the food product from the package one by one because there is a danger such as bursting, resulting in much labor required.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a food product packaging bag, which is capable of being subjected to a cooking in a food product packaging state to provide a food product having a good taste.

It is another object of the present invention to provide a food product packaging bag which enables a food product to be kept in a completely sealed state for protection in the course of distribution, and which can be utilized to perform a cooking of the food product contained therein in a microwave oven.

To achieve the above object, according to a first aspect and feature of the present invention, there is provided a food product packaging bag, comprising a bag body made of a synthetic resin film, and an air discharge means adapted to ensure that when the internal pressure in the bag exceeds a predetermined level, air is discharged to prevent the internal pressure in the bag from being risen more than a given value.

According to a second aspect and feature of the present invention, in addition to the first feature, the air discharge means is a zigzag air discharge passage which is formed by heat-fusing of opposed inner surfaces of the bag body made of the synthetic resin film.

According to a third aspect and feature of the present invention, in addition to the first feature, the air discharge means is a tubular member including a zigzag air discharge passage which is formed by heat-fusing of opposed inner surfaces of the tubular member made of the synthetic resin film.

According to a fourth aspect and feature of the present invention, there is provided a food product packaging bag comprising a bag body made of a synthetic resin film, an air discharge means provided in the bag body for discharging air in the bag, a first opening means used to put the inside and outside of the bag into communication with each other by the air discharge means, and a second opening means used to take out a food product in the bag.

According to a fifth aspect and feature of the present invention, in addition to the fourth feature, the air discharge means has an air discharge passage having a predetermined length and formed by heat-fusing of opposed inner surfaces of the bag body made of the synthetic resin film.

According to a sixth aspect and feature of the present invention, in addition to the fourth or fifth feature, the first opening means comprises a guide which is heat-fused to the synthetic resin film to extend to opposite sides of the bag body, including an opening of an air discharge port of the air discharge means, and a cutout provided in the side of the bag body between the guide and the air discharge means.

According to a seventh aspect and feature of the present invention, in addition to the first or fourth feature, the synthetic resin film is a laminate film made by laminating, to an inner side of a nylon film, a low-density polyethylene film or unstretched polypropylene film, or a laminate film made by further laminating, to an outer side of the nylon film, a silica-deposited polyethylene terephthalate film or an oxidized aluminum-deposited polyethylene terephthalate film.

According to an eighth aspect and feature of the present invention, there is provided a food product packaging bag comprising a bag body made of synthetic resin film, and a band-like guide provided between the folded and superposed synthetic resin film, so that a food product is accommodated in the bag body, the food product packaging bag further including an air discharge passage formed between at least one surface of the guide and the synthetic resin film.

According to a ninth aspect and feature of the present invention, in addition to the eighth feature, only

the one surface of the guide is heat-fused to the synthetic resin film to form the air discharge passage between the other surface of the guide and the synthetic resin, so that the inside of the bag body is permitted to communicate with the outside by the air discharge passage.

According to a tenth aspect and feature of the present invention, in addition to the eighth feature, all of one surface and a portion of the other surface of the guide are heat-fused to the synthetic resin film to form an air discharge passage between the non-fused portion of the other surface of the guide and the synthetic resin film, so that the inside of the bag body is permitted to communicate with the outside by the air discharge passage.

According to an eleventh aspect and feature of the present invention, in addition to the tenth feature, the bag further includes an opening for enabling a food product in the bag to be taken out is formed by cutting away the guide from the bag body.

According to a twelfth aspect and feature of the present invention, in addition to the eighth feature, an air discharge valve portion provided in the bag and formed by partially heat-fusing the superposed synthetic resin films to each other, so that the inside of the bag body is permitted to communicate with the air discharge passage by the air discharge valve portion.

According to a thirteenth aspect and feature of the present invention, in addition to the eighth feature, a portion of the guide is not heat-fused to the synthetic resin film to form an air discharge passage between such portion and the synthetic resin film, the air discharge passage being formed so that the inside of the bag body is put into communication with the outside by cutting away a portion of the bag body along the guide.

According to a fourteenth aspect and feature of the present invention, in addition to the thirteenth feature, the bag further includes an opening for enabling a food product in the bag to be taken out by cutting away the guide from the bag body.

According to a fifteenth aspect and feature of the invention, in addition to the first feature, the bag further includes a sealing means for sealing an air discharge port of the air discharge means, wherein the sealing means is opened when it is heated.

The synthetic resin film may be any of those which have a heat resistance enough to withstand the heating and cooking of a food product contained in the bag in a microwave oven. It is preferable that the synthetic resin film further has a resistance to the cold during freezing. More specifically, it is preferable that the synthetic resin film is a laminate film made by laminating a low-density polyethylene film or an unstretched polyethylene film to an inner side of a nylon film. For a retort food product, it is preferable that the synthetic resin film is a laminate film made by further laminating a silica-deposited polyethylene terephthalate film or an oxidized aluminum-deposited polyethylene terephthalate film to an outer side of the nylon film. The bag body can be made by folding a single sheet of synthetic resin film to heat-seal the side portions thereof. But it is also possible to made the bag body by superposing two sheets of synthetic resin films to heat-seal the side portions thereof.

The air discharge means preferably has an air discharge passage having a predetermined length, so that a predetermined air flow resistance is provided. Depending upon the type of a food product packaged, and for example, for a bag for packaging a hamburger steak, it is particularly unnecessary to increase the pressure in the bag, but for a bag for packaging a meat bun, it is preferable that an air discharge passage is formed so that an internal pressure near a condition provided during steaming of the meat bun is consequently provided. Of course, even for the hamburger steak, the taste of the cooked hamburger steak product can be enhanced by increasing the internal pressure in the bag. That is, it is more preferable that the length, width or shape of the air discharge passage is properly selected depending upon the type of a food product packaged in the bag and the type of a cooking method such as a simple heat-cooking, a steam-cooking and the like.

The air discharge means for ensuring that when the internal pressure in the bag exceeds a predetermined level, air is discharged to prevent the internal pressure from being risen beyond a given internal pressure, may be formed into a so-called air discharge valve structure which is capable of maintaining the given internal pressure. However, it is preferable for manufacture of the food product packaging bag that a zigzag air-discharge passage is formed by heat-fusing opposed inner surfaces of the bag body formed of synthetic resin films to each other.

When the air discharge means is a tubular member having a zigzag air-discharge passage formed by heat-fusing opposed inner surfaces of the tubular member made of the synthetic resin film, the air discharge means can be provided in the bag only by mounting the tubular member to any of bags having various shapes and sizes. Therefore, it is preferable for manufacture of the food product packaging bag that such a tubular member is used as an air discharge means.

Particularly, when the amount of water is insufficient in the bag depending upon the type and condition of a food product or the type of a cooking method, a suitable water source may be contained in the bag along with the food product.

If required, the food product packaging bag may be further packed with another outer packing bag for the purpose of insuring the sanitation of a food product.

To package a food product in the food product packaging bag, for example, a bag article may be prepared in a state in which only the bottom of the bag is not heat-sealed, and the bag article in this state may be delivered to a food product maker. In this food product maker, a food product may be placed into the bag article and then, the bottom may be heat-sealed, thereby completing the packaging.

Thus, when a meat bun is packaged in the food product packaging bag according to the present invention, the food product packaging bag containing the meat bun may be subjected, as it is, to a cooking in a microwave oven. Then, the meat bun in the bag is heated, and air in the bag is expanded, while at the same time, water vapor is generated. As a result, the inside of the bag is brought into the same state as in a steaming basket, and the internal pressure in the bag is risen up to a given level and maintained at this given level. If the internal pressure in the bag is intended to be further risen, the air in the bag is discharged through the air discharge means. In this manner, the meat bun is cooked into a good taste, as in a case where it is cooked in a steaming basket. Even for a frozen food product of broiled eel, it is cooked into a good taste, as is the meat bun, in a manner that it is steamed under a given internal pressure, unlike a case where it is heated and thawed in a microwave oven.

In the fourth feature of the present invention, the inside and outside of the bag can be put into communication with each other by the air discharge means by cutting away a portion of the bag by use of the first opening means. If the food product packaging bag in this state is subjected to a heat-cooking, the air in the bag is properly discharged and hence, there is no danger of rising of the internal pressure in the bag up to an abnormal level. After completion of the heat-cooking, the bag can be opened by use of the second opening means to take out the food product. Therefore, according to the present invention, the food product can be protected in a completely sealed state in the packaging bag, when it is in a preserved state in the course of distribution, and the food product in the packaging bag can be heat-cooked in a microwave oven.

The first opening means ensures that the air discharge port of the air discharge means can be reliably unsealed by provision of the guide in addition to the cut-out.

Further, if a sealing means which can be opened when it is heated is provided at the air discharge port of the air discharge means, the air discharge port can be opened when heat-cooked in a microwave oven.

In the eighth feature of the present invention, the air in the bag can be discharged to the outside as required during heating of the bag in the microwave oven, by provision of the air discharge passage formed between the superposed synthetic resin films and at least one surface of the band-like guide provided between the superposed synthetic resin films.

Alternatively, by heat-fusing only the one surface of the guide to the synthetic resin film, the air discharge passage may be formed between the other surface of the guide and the synthetic resin film. Thus, the communication permitted between the inside of the bag and the outside by the air discharge passage ensures that if the internal pressure in the bag is risen, the air in the bag can be passed through the air discharge passage along the guide and discharged to the outside.

Alternatively, by heat-fusing all of the one surface of the guide and a portion of the other surface of the guide to the synthetic resin film, the air discharge passage may be formed between the synthetic resin film and the non-fused portion of the other surface of the guide. In this case, a heat-fused portion may be provided on that surface of the synthetic resin film which is located inside of the bag along the guide, excluding the outer periphery of the bag, because the other surface of the guide has a portion heat-fused to the synthetic resin film. Therefore, the opening for enabling the food product in the bag to be taken out can be formed by cutting away the guide from the bag. With such construction, the guide forms the air discharge passage permitting the communication of the inside of the bag with the outside. Therefore, when the internal pressure in the bag is risen, the air in the bag can be discharged to the outside by provision of the air discharge passage permitting the communication of the inside of the bag with the outside, and the guide can be used for opening of the bag.

The internal pressure in the bag during heating can be finely regulated by provision of the air discharge valve portion permitting the communication of the inside of the bag with the outside by partially heat-fusing the opposed inner surfaces of the bag body made of the superposed synthetic resin films. Thus, a food product can be cooked into a good taste by regulating the internal pressure during heating depending upon the type of the food product.

The air discharge passage may be formed at that portion of the guide which is not heat-fused to the synthetic resin film. Such air discharge passage can be formed into a configure permitting the communication of the inside of the bag with the outside by cutting away a portion of the bag along the guide. With such configure, the sealability of the inside of the bag can be insured, and the bag, as it is, can be put into the distribution. If the internal pressure in the bag is risen during heating and cooking of the food product contained in the bag, the air in the bag can be discharged to the outside through the air discharge passage. In addition, since only a portion of the guide is not heat-fused to the synthetic resin film, no heat-fused portion may be provided on that surface of the synthetic resin film which is located inside of the bag along the guide, excluding the outer periphery of the bag. Therefore, the opening for enabling the food product in the bag to be taken out can be formed by cutting away the guide from the bag. With such configure, the guide forms the air discharge passage permitting the communication of the inside of the bag with the outside. Therefore, when the internal pressure in the bag is risen, the air in the bag can be discharged to the outside by provision of the air discharge passage permitting the communication of the inside of the bag with the outside, and the guide can be used for opening of the bag.

The above and other objects, features and advantages of the invention will become apparent from the following description of the preferred embodiments taken

in conjunction with the accompanied drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig.1 is a front view of a food product packaging bag according a first embodiment of the present invention;
Fig.2 is a front view of the food product packaging bag during heat-cooking in a microwave oven;
Fig.3 is a sectional view showing an air discharging state during heat-cooking in the microwave oven;
Fig.4 is a front view of the food product packaging bag when a food product is taken out from the bag;
Fig.5 is a front view of an air discharge means used in a second embodiment of a food product packaging bag according to the invention;
Fig.6 is a front view of the second embodiment of the food product packaging bag according to the invention;
Fig.7 is a front view of a food product packaging bag according to a third embodiment of the invention;
Fig.8 is an enlarged sectional view of an essential portion of the food product packaging bag during heating in the microwave oven, taken along the line VIII-VIII in Fig.7;
Fig.9 is an enlarged sectional view of an essential portion of the food product packaging bag during heating in the microwave oven, taken along the line IX-IX in Fig.7;
Fig.10 is a front view of an essential portion of a food product packaging bag according to a fourth embodiment of the invention;
Fig.11 is an enlarged sectional view of an essential portion of the food product packaging bag during heating in the microwave oven, taken along the line XI-XI in Fig.10;
Fig.12 is an enlarged sectional view of an essential portion of the food product packaging bag during heating in the microwave oven, taken along the line XII-XII in Fig.10;
Fig.13 is a front view of an essential portion of a food product packaging bag according to a fifth embodiment of the invention;
Fig.14 is a front view of an essential portion of a food product packaging bag according to a sixth embodiment of the invention;
Fig.15 is an enlarged sectional view of an essential portion of the food product packaging bag during heating in the microwave oven, taken along the line XV-XV in Fig.14;
Fig.16 is an enlarged sectional view of an essential portion of the food product packaging bag during heating in the microwave oven, taken along the line XVI-XVI in Fig.14;
Fig.17 is a front view of an essential portion of a food product packaging bag, and
Fig.18 is a enlarged sectional view of essential portion of the bag, taken along the line XVIII-XVIII.

DETAILED DESCIPTION OF THE PREFERRED EMBODIMENTS

A food product packaging bag according to the present invention will now be described by way of particular embodiments with reference to the accompanying drawings.

First, the structure of the food product packaging bag according to an embodiment the present invention will be described with reference to Fig.1.

This embodiment shows an example of the food product packaging bag formed as a bag for packaging a hamburger steak. In the embodiment, the bag 20 is formed by a laminate film (a synthetic resin film) 10 which is formed by laminating, in a dry manner, a barrier-like nylon film having a thickness of 15 μm to an outer side of a linear low-density polyethylene (LLDPE) film having a thickness of 40 μm.

The bag 20 is formed into a size of 23 cm length × 18 cm width by the synthetic resin film 10, so that four sides of the bag 20 are heat-sealed in a state in which it has contained a hamburger steak 100 therein. In a state before the bag contains the hamburger steak, only three sides of the bag 20 are heat-sealed, and a bottom of the bag remains open without being heat-sealed to serve as an inlet through which the hamburger steak is accommodated into the bag.

An air discharge means 30 for discharging air within the bag 20 is provided in the vicinity of the upper side of the bag 20. The air discharge means 30 includes a zigzag-shaped air discharge passage 30A having a predetermined length and formed by heat-fusing opposite surfaces of the synthetic resin film 10 forming the bag to each other. The air discharge passage 30A is comprised of a zigzag passage portion 30F formed by a heat fusing line 30C forming a recess 30B and a heat-fusing line 30E forming a projection 30D, and an aid discharge port 30G connected to the zigzag passage portion 30F and formed so that it is gradually spread toward a top.

A guide 40 is provided at an upper portion of the air discharge port 30G to extend to the opposite sides of the bag 20. Opposite surfaces of the guide 40 are heat-fused to the synthetic resin film. A cutout 50A is provided in the side of the bag 20 between the guide 40 and the air discharge means 30. In this case, a first opening means is constituted by the guide 40 and the cutout 50A.

A cutout 50B forming a second opening means is provided in the side of a lower portion of the bag 20.

The service state of the food packaging bag according to the first embodiment will be described below.

First, the food packaging bag maintained in a preserved state in the course of the distribution is in a state shown in Fig.1, wherein the inside of the bag 20 is kept in a sealed state.

To cook a food product packaged in the food packaging bag in a microwave oven, a first opening is carried

out from the cutout 50A along the guide 40. During this time, the guide 40 and a heat-sealed portion of the bag 20 located above the guide 40 are cut away, thereby opening the air discharge port 30G. Fig.2 shows the air discharge port 30G in its opened state.

The discharging of air in the heat-cooking of the food product packaged in the bag in the microwave oven is shown in Fig.3. Water contained in the food product is vaporized, and air is expanded to rise the internal pressure in the bag 20, but the air in the bag 20 is discharged to the outside through the air discharge port 30G, as shown in Fig.3. Therefore, the bag 20 cannot be burst.

After completion of the heat-cooking, a second opening is carried out by use of the cutout 50B, and the food product, i.e., hamburger steak 100 is taken out from the bag 20. Fig.4 shows the bag in a state after completion of the second opening.

The cutout 50B as the second opening means has been described as being provided in the lower portion of the bag 20 in the above embodiment, but the cutout 50B may be provided in the vicinity of a lower portion of the air discharge means 30, so that the air discharge means 30 may be cut away by use of the second opening means.

A meat bun was placed into the bag 20 formed as described above and was then heated for 2 to 5 minutes in a microwave oven (high frequency output power of 500 W). As a result, vapor was generated in the bag 20, and the bag 20 was brought into a steamed state similar to that in a so-called steaming basket. When the internal pressure in the bag 20 reached a given level, air started leaking through the air discharge port 30G. In this manner, the cooking could be finished without bursting of the bag.

As a result of eating of the meat bun cooked by heating, it was confirmed that the meat bun was steamed into very good taste.

In place of the meat bun, a frozen food product of broiled eel was placed into the bag 20 and cooked likewise in the microwave oven. The result showed that the frozen food product of broiled eel was cooked into good taste, as was the meat bun.

Figs.5 and 6 illustrate a second embodiment of a food product packaging bag according to the present invention. In the second embodiment, an air discharge means is configured as shown in Fig.5.

More specifically, a tubular member 21 was formed using a synthetic resin film 10 as in the previous embodiment. Opposed inner surfaces of the tubular member 21 made of the synthetic resin film 10 were heat-fused to each other at one end of the tubular member 21 to form an air discharge means 31 comprised of a zigzag air-discharge passage 30A of the same shape as in the previous embodiment and the like. Portions having the same function as those in the previous embodiment are designated by like reference characters, and the description of them is omitted.

The air discharge means 31 comprising the tubular member 21 is provided so that an air discharge port 30G of the air discharge means 31 communicates with the outside of the bag 20 when the synthetic resin film 10 is heat-sealed to form a bag 20, as shown in Fig.6.

In such embodiment, the bag can be produced in a usual manufacture line only by mounting an attachment for supplying the tubular member to a horizontal pillow-type bag making machine.

A meat bun and a frozen food product of broiled eel were placed into the bags 20 according to the second embodiment, respectively and heat-cooked in a microwave oven in the same manner as in the previous embodiment. The result showed that both of the meat bun and the frozen food product of broiled eel were cooked into a good taste without bursting of the bags 20.

A third embodiment of a food product packaging bag according to the present invention will be described below with reference to Figs.7 to 9.

A band-like or zonation guide 41 is provided in the vicinity of a top side of the bag 20 to extend to opposite sides of the bag 20. One surface of the guide 41 is heat-fused to a synthetic resin film, and the other surface of the guide 41 is not heat-fused to form an air discharge passage 31 between the other surface of the guide 41 and the synthetic resin film 10, as shown in Fig.9. An air discharge port 31G is provided in an upper and central portion of the inside of the bag 20 for permitting the communication between the inside of the bag 20 and the air discharge passage 31 formed by the guide 41. The air discharge port 31G is formed so that it is gradually spread toward its top.

The function during heating of the food product packaging bag according to this embodiment in a microwave oven will be described below.

A food product contains water therein and hence, if the food product is heat-cooked in the microwave oven, water contained in the food product is vaporized, and air in the bag is expanded to rise the internal pressure in the bag. At this time, the expanded air is passed through the air discharge port 31G to the guide 41. Therefore, the air discharge passage 31 is formed in a manner that the synthetic resin film 10 and the non-fused surface of the guide 41 which is in close contact with the synthetic resin film in a usual state are forced away from each other by the introduced air to form the air discharge passage 31. This permits the air in the bag 20 to be discharged to the outside. Therefore, the bag 20 cannot be burst.

The amount of air discharged to the outside of the bag 20 is influenced by the length and the sectional area of the air discharge passage 31. Therefore, the amount of air discharged can be regulated by changing the width of the guide 41 or the width of the air discharge port 31G on the side of the guide 41, or by changing the position of the air discharge port 31G. Thus, the used synthetic resin film 10 can be prevented from being burst by regulating the amount of air discharged. The internal pressure during heat-cooking of a

food product in the microwave oven can be changed, so that a pressure depending upon the type of the food product is applied.

A fourth embodiment of a food product packaging bag according to the present invention will be described with reference to Figs.10 to 12.

Even in this embodiment, four sides of a synthetic resin film is heat-sealed to form a bag 20 for packaging a food product, as in the previously described embodiments.

A band-like guide 42 is provided in the vicinity of a top side of the bag 20 to extend to opposite sides of the bag 20. One surface of the guide 42 is heat-fused to the synthetic resin 10, and the other surface of the guide 42 is partially heat-fused to the synthetic resin film 10. More specifically, longitudinally upper half of the other surface of the guide 42 is not heat-fused to form an air discharge passage 32 between the longitudinally upper half and the synthetic resin film 10, as shown in Fig.12. An air discharge passage 32A is formed in the lower half of the other surface of the guide 42 for permitting the communication between the inside of the bag 20 and the air discharge passage 32. A cutout 51 is provided in the side of the bag 20 at a location where the guide 42 is heat-fused, so as to extend along the side of the guide 42.

The function during heating of the food product packaging bag according to this embodiment in a microwave oven will be described below.

Air expanded during heat-cooking of the food product packaging bag is passed through the air discharge passage 32A to the guide 42. Therefore, the air discharge passage 32 is formed in a manner that the synthetic resin film 10 and the non-fused surface of the guide 42 which is in close contact with the synthetic resin film in a usual state are forced away from each other by the introduced air to form the air discharge passage. This permits the air in the bag 20 to be discharged to the outside.

Even in this embodiment, the amount of air discharged to the outside of the bag 20 is influenced by the length and the sectional area of the air discharge passage 32. Therefore, the amount of air discharged can be regulated by changing the width of the guide 42 or the width of the heat-fused portion of the guide 42, or by changing the width of the air discharge passage 32A or the position of air discharge passage 32A formed.

According to this embodiment, after completion of the heating and cooking, the guide 42 can be cut away by use of the cutout 51 to take the food product out of the bag 20.

A fifth embodiment of a food product packaging bag according to the present invention will be described below with reference to Fig.13.

Even in the fifth embodiment, four sides of a synthetic resin film are heat-sealed to form a bag 20 for packaging a food product, as in the above-described embodiments.

A band-like guide 43 is provided in the vicinity of a top side of the bag 20 to extend to opposite sides of the bag 20. One surface of the guide 43 is heat-fused to the synthetic resin 10, and the other surface of the guide 42 is not heat-fused to the synthetic resin film 10 to form an air discharge passage 32 between the other surface of the guide 42 and the synthetic resin film 10. An air discharge means 30 is provided at an upper and central portion of the inside of the bag 20, as in the first embodiment.

In the fifth embodiment, the amount of air discharged can be regulated by the fact that the air discharge means 30 is further provided. Thus, the used synthetic resin film can be prevented from being burst by regulating the amount of air discharged. The internal pressure in the bag during heat-cooking of a food product in a microwave oven can be changed, so that a pressure depending upon of the type of the food product can be applied.

In any of the second to fourth embodiments, the inside of the bag 10 is not in a completely sealed state, and for this reason, when the food product packaging bag is in a preserved state in the course of distribution, it is necessary to further place the bag 20 into another sealed bag.

A sixth embodiment of a food product packaging bag according to the present invention, which is capable of being maintained in a sealed state when it is in a preserved state in the course of distribution, will be described with reference to Figs.14 to 16.

In this embodiment also, four sides of a synthetic resin film 10 are heat-sealed to form a bag 20 for packaging a food product, as in the previous embodiment.

A band-like guide 44 is provided in the vicinity of a top side of the bag 20 to extend to opposite sides of the bag 20, in a manner that it is heat-fused between opposed inner surfaces of the bag made of the synthetic resin 10. One surface of the guide 44 has a portion which is not heat-fused partially widthwise over the entire width. This non-fused portion forms an air discharge passage 33. A space 33A resulting from the non-fusing is provided in the vicinity of the air discharge passage 33 at an upper heat-fused portion of the bag 20 made of the synthetic resin film 10. Cutouts 52A and 52B are provided along opposite sides of the guide 44 in the side of the bag 20 at locations where the guide 44 is heat-fused.

The service state of the food product packaging bag according to the sixth embodiment will be described below.

First, Fig.14 shows the food product packaging bag in a preserved state in the course of distribution and the like. In this state, the inside of the bag 20 is kept in a sealed state.

To cook a food product contained in the bag in a microwave oven, the upper heat-fused portion of the bag 20 is cut away from the cutout 52A along the guide 44. At this time, the upper heat-fused portion of the bag 20 cannot be unnecessarily completely cut away along the guide, and a heat-sealed portion in the vicinity of the

guide may be left in some cases. Even in such cases, however, the air discharge passage 33 communicates with the outside, because the space 33A resulting from the non-fusing is provided the upper heat-fused portion in the vicinity of the air discharge passage 33.

If the heat-cooking of the food product contained in the bag is carried out in the microwave oven in this state, water contained in the food product is vaporized, and air is expanded to rise the internal pressure in the bag, but the air in the bag 20 is discharged to the outside through the air discharge passage 33. Therefore, the bag 20 cannot be burst.

After completion of the heat-cooking, the guide 44 can be cut away by use of the cutout 52B, thereby taking out the food product from the bag 20.

Next, a seventh embodiment will now be described with reference to Figs.17 and 18. In this embodiment, a food product packaging bag can be kept in its sealed state during preservation in the course of the distribution, but the bag can be opened if it is heated.

In the present embodiment, among four sides of the synthetic resin films 10, one of the sides, i.e., the upper side to which the air discharge port 30G opens is formed as a sealing means 60 which can be opened when it is heated. Each of the remaining three sides of the synthetic resin films 10 are heat-sealed together as in the previous embodiments, so as to form a bag 20 for receiving a food product.

The seal means 60 comprises a heat-resistant film 61 which is made of polyester or the like and is sandwiched between the synthetic resin films 10. The seal means 60 is provided at its opposite surfaces with sealing layers which are made by coextrusion, dry-lamination or coating. The adhesive force or attaching force of the sealing layer with respect to the synthetic resin film 10 and the heat-resistant film 61 is weakened when the sealing layer is heated.

Next, the service state of the food product packaging bag according to the seventh embodiment will be described.

First, Figs.17 and 18 shows the food product packaging bag in a preserved state in the course of distribution and the like. In this state, the inside of the bag 20 is kept in a sealed state.

When a food product contained in the bag is heated for cooking in a microwave oven, the adhesive force or attaching force of the seal means 60 is weakened by such heat. And when the pressure within the bag 20 is increased, the expanded air is passed through the air discharge passage 30A and filled in the air discharge port 30G also. The air filled within the air discharge port 30G acts to break the seal between the synthetic resin film 10 and heat-resistant film 61 which constitute the seal means 60. Therefore, the seal means 60 opens, and the air within the bag 20 is discharged to the outside through the air discharge passage 33. Thus, the bag 20 cannot be burst.

As described above, according to the present invention, it is possible to provide a food product packaging bag which cannot be accompanied by a danger such as a bursting, even if the food product is cooked by heating in the microwave oven, while remaining contained in the bag.

In addition, according to the present invention, it is possible to provide a food product packaging bag which enables a food product contained in the bag to be heat-cooked in a microwave oven into a food having a good taste.

Further, according to the present invention, when the food product packaging bag is in a preserved state in the course of distribution, a food product can be protected in a completely sealed state and heat-cooked in a microwave oven by utilizing the packaging bag.

Claims

1. A food product packaging bag (20), comprising a bag body made of a synthetic resin film (10), and an air discharge means (30) adapted to ensure that when the internal pressure in said bag (20) exceeds a predetermined level, air is discharged to prevent the internal pressure in said bag (20) from being risen more than a given value.

2. A food product packaging bag (20) according to claim 1, wherein said air discharge means (30) is a zigzag air discharge passage which is formed by heat-fusing of opposed inner surfaces of said bag body made of the synthetic resin film (10).

3. A food product packaging bag (20) according to claim 1, wherein said air discharge means (30) is a tubular member including a zigzag air-discharge passage (30A) which is formed by heat-fusing of opposed inner surfaces of said tubular member made of the synthetic resin film (10).

4. A food product packaging bag (20) comprising a bag body made of a synthetic resin film (10), an air discharge means (31) provided in said bag body for discharging air in said bag (20), a first opening means used to put the inside and outside of said bag (20) into communication with each other by said air discharge means (31), and a second opening means used to take out a food product in said bag.

5. A food product packaging bag (20) according to claim 4, wherein said air discharge means (31) has an air discharge passage (30A) having a predetermined length and formed by heat-fusing of opposed inner surfaces of said bag body made of the synthetic resin film (10).

6. A food product packaging bag (20) according to claim 4 or 5, wherein said first opening means comprises a guide which is heat-fused to the synthetic resin film (10) to extend to opposite sides of said

bag body, including an opening of an air discharge port of the air discharge means (31), and a cutout provided in the side of said bag body between said guide and said air discharge means (31).

7. A food product packaging bag (20) according to claim 1 or 4, wherein said synthetic resin film (10) is a laminate film made by laminating, to an inner side of a nylon film, a low-density polyethylene film or unstretched polypropylene film, or a laminate film made by further laminating, to an outer side of the nylon film, a silica-deposited polyethylene terephthalate film or an oxidized aluminum-deposited polyethylene terephthalate film.

8. A food product packaging bag (20) comprising a bag body made of a synthetic resin film (10), and a band-like guide (41; 42; 43; 44) provided between the folded and superposed synthetic resin film (10), so that a food product is accommodated in said bag body, said food product packaging bag (20) further including an air discharge passage (31) formed between at least one surface of the guide (41; 42; 43; 44) and the synthetic resin film (10).

9. A food product packaging bag (20) according to claim 8, wherein only the one surface of the guide (41; 42; 43; 44) is heat-fused to the synthetic resin film (10) to form said air discharge passage (31) between the other surface of the guide and the synthetic resin, so that the inside of said bag body is permitted to communicate with the outside by said air discharge passage (31).

10. A food product packaging bag (20) according to claim 8, wherein all of one surface and a portion of the other surface of said guide (41; 42; 43; 44) are heat-fused to the synthetic resin film (10) to form an airdischarge passage (31) between the non-fused portion of the other surface of said guide (41; 42; 43; 44) and the synthetic resin film (10), so that the inside of said bag body is permitted to communicate with the outside by said air discharge passage (31).

11. A food product packaging bag (20) according to claim 10, further including an opening for enabling a food product in said bag (20) to be taken out, said opening being formed by cutting away said guide (41; 42; 43; 44) from said bag body.

12. A food product packaging bag (20) according to claim 8, further including an air discharge valve portion provided in said bag (20) and formed by partially heat-fusing the superposed synthetic resin films (10) to each other, so that the inside of said bag body is permitted to communicate with said air discharge passage (31) by said air discharge valve portion.

13. A food product packaging bag (20) according to claim 8, wherein a portion of said guide (41; 42; 43; 44) in not heat-fused to the synthetic resin film (10) to form an air discharge passage (31) between said portion and the synthetic resin film, said air discharge passage (31) being formed so that the inside of said bag body is put into communication with the outside by cutting away a portion of said bag body along said guide (41; 42; 43; 44).

14. A food product packaging bag (20) according to claim 13, further including an opening for enabling a food product in the bag (20) to be taken out, said opening being formed by cutting away said guide (41; 42; 43; 44) from said bag body.

15. A food product packaging bag (20) according to claim 1, further including a sealing means (60) for sealing an air discharge port of the air discharge means (31), wherein the sealing means (60) is opened when it is heated.

FIG. 1

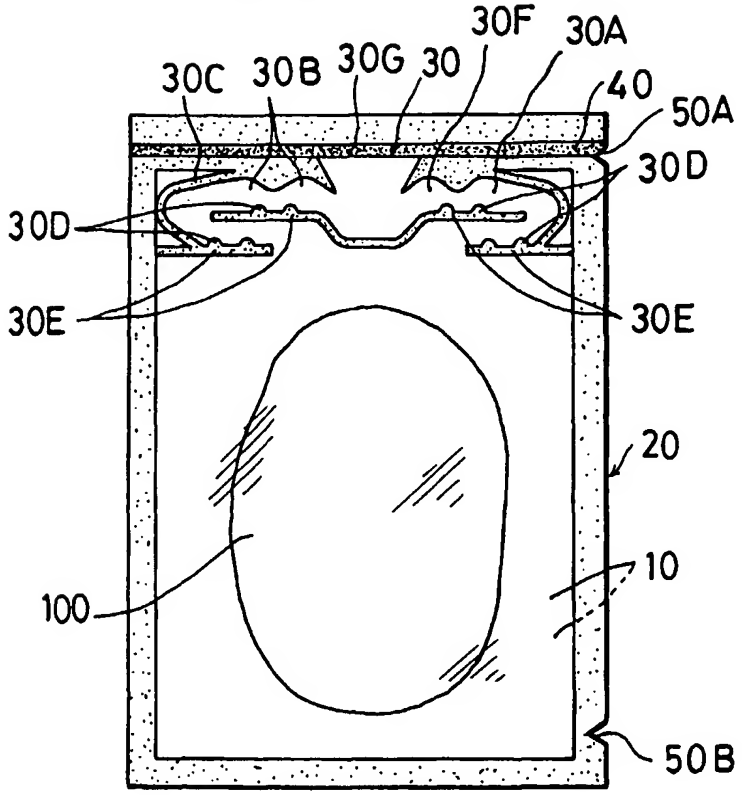
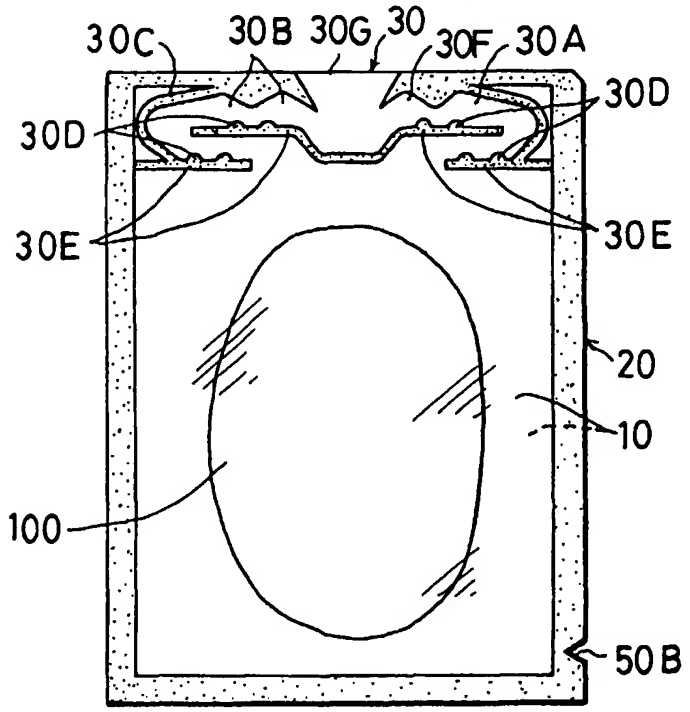

30F
30A
30C
30B
30G
30
40
50A
30D
30D
30E
30E
20
10
100
50B

FIG. 2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30B
30G
30
30F
30A
30D
30D
30E
30E
20
10
100
50B

FIG. 3

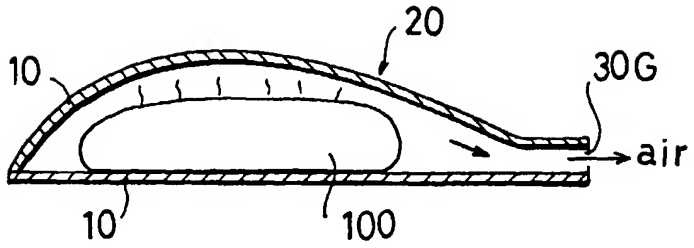
20
10
30G
air
10
100

FIG. 4

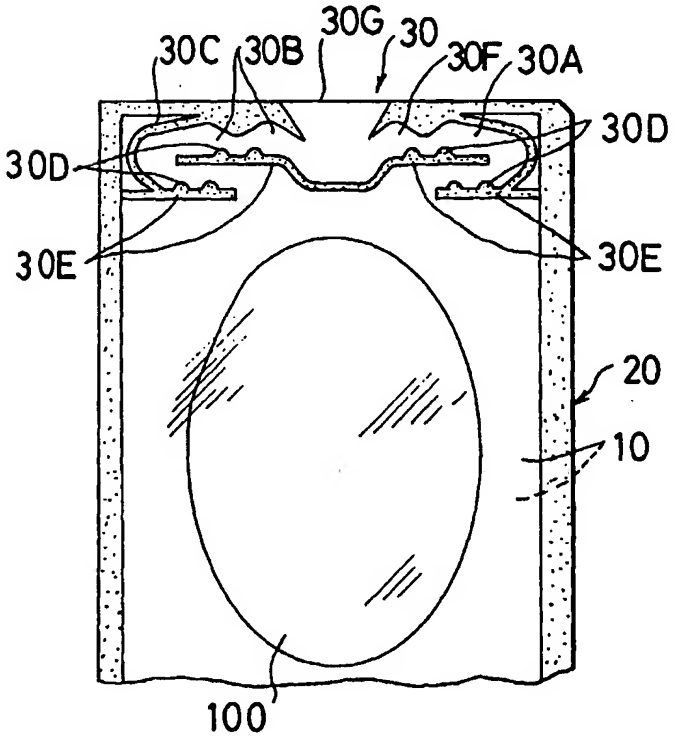
30G
30C
30B
30
30F
30A
30D
30D
30E
30E
20
10
100

FIG.5

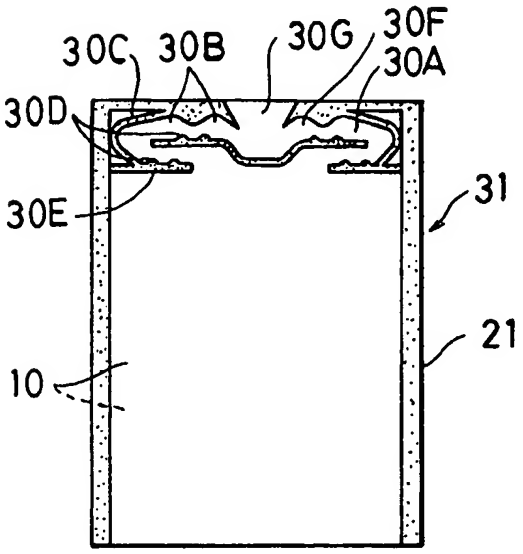

FIG.6

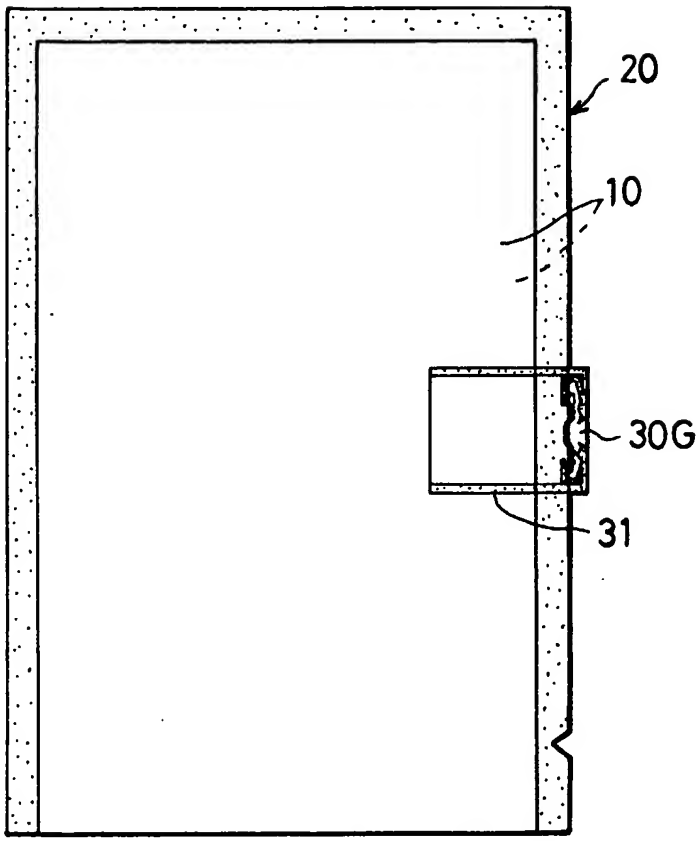

FIG. 7

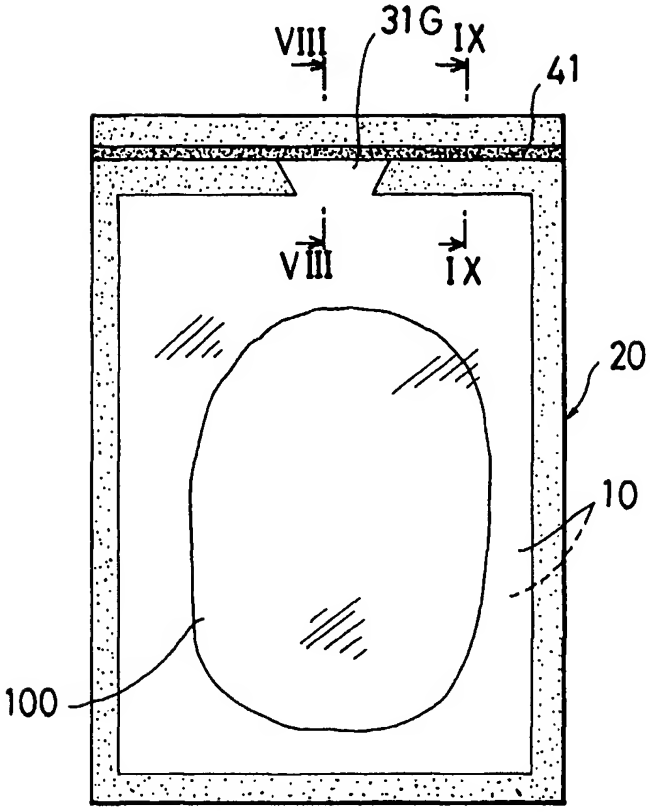

FIG. 8

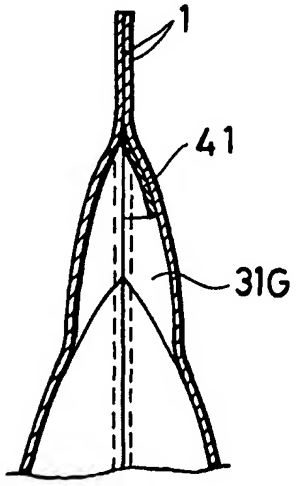

FIG. 9

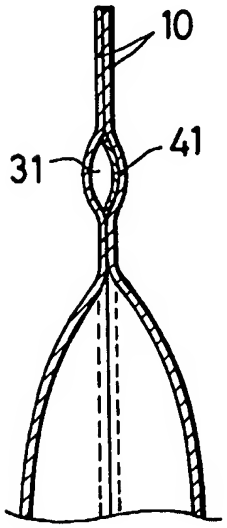

FIG. 10

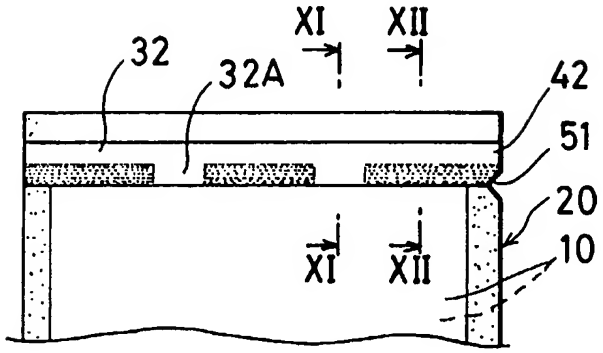

FIG. 11

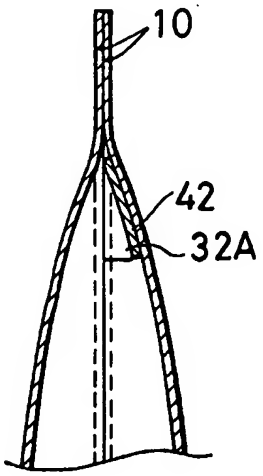

FIG. 12

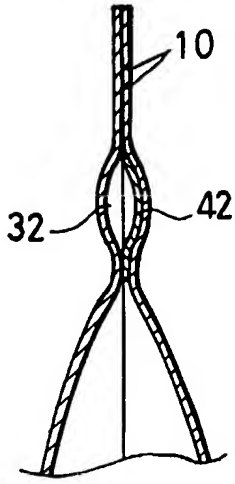

FIG. 13

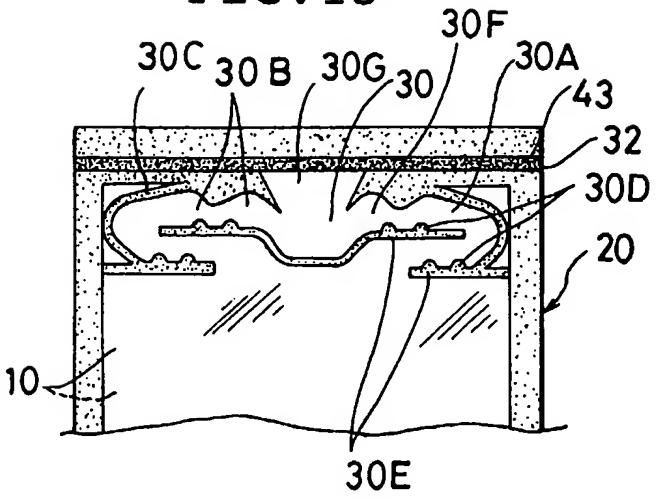

FIG. 14

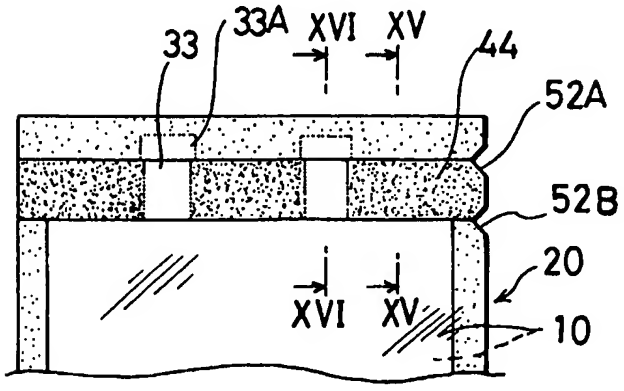

FIG. 15

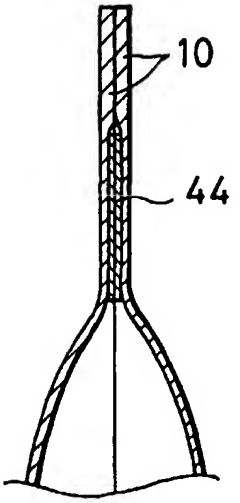

FIG. 16

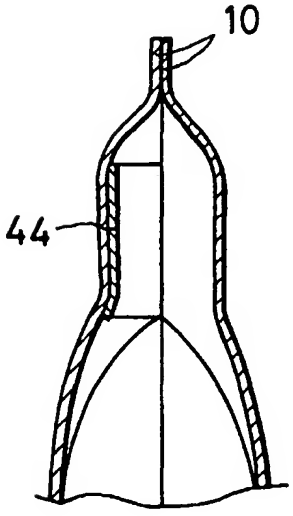

FIG. 17

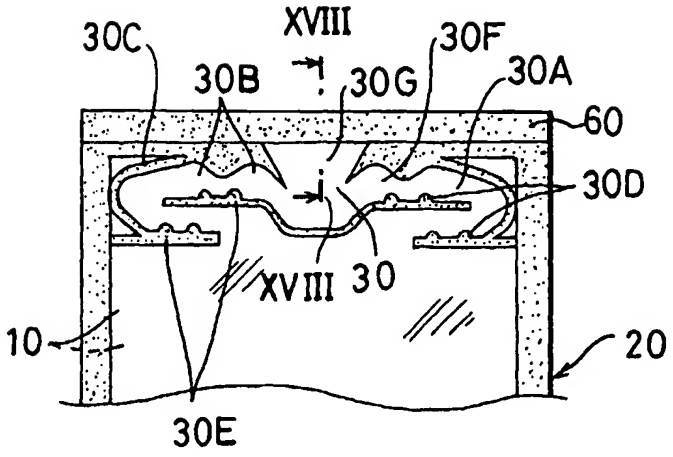

FIG. 18